POPOV, L.N., kand. tekhn. nauk

Frost resistance of fine concrete manufactured by the vibration rolling method. Bet. i zhel.-bet. 9 no.11:521-523 N '63.
(MIRA 17:1)

KHLUSOV, Andrey Yevstaf'yevich; POPOV, L.N., kand. tekhn. nauk,
retsenzent; GRONDA, V.I., red.; SERGEYEV, V.M., red.;
YASHUKOVA, N.V., tekhn. red.

[Exercises and course projects in load-lifting and convey-
ing equipment of building materials plants] Uprazhneniia i
kursovoe proektirovanie po gruzopod"emnomu i transportnomu
oborudovaniiu zavodov stroitel'nykh detalei. Moskva, Roz-
vuzizdat, 1963. 139 p.   (MIRA 17:3)

POPOV, L.N., kand. tekhn. nauk, st. nauchn. sotr.; ANTONOVA, N.N.,
inzh., red.;

[Using spent soap lye as a plasticizer in mortars] Pri-
menenie podmyl'nogo shcheloka v kachestve plastifikatora
stroitel'nykh rastvorov; iz opyta Clavnosstroia. Moskva,
Gosstroiizdat, 1963. 19 p.   (MIRA 16:8)

1. Nauchno-issledovatel'skiy institut Clavnogo upravleniya
po zhilishchnomu i grazhdanskomu stroitel'stvu v'g.Moskve
(for Popov).
          (Alkalies)   (Plasticizers)

GAVRIKOV, S.I.; POPOV, L.N.

Geology and metal potential of volcanic rocks in the Okhotsk-
Indigirka divide. Geol. i geofiz. no.7:97-106 '62.
(MIRA 16:7)

1. Yakutskoye geologicheskoye upravleniye.
(Soviet Far East—Rocks, Igneous)
(Soviet Far East—Ore deposits)

POPOV, L. N., kand. tekhn. nauk; SHVARTSZAYD, M. S., kand. tekhn. nauk

Lightweight fine-grained silicate concrete. Stroi. mat. 8 no.9:
33-34 S '62.   (MIRA 15:10)

(Sand-lime products—Testing)

GAK, B.N., kand.tekhn. nauk; GERVIDS, I.A., kand. tekhn. nauk; GONCHAR, P.D., inzh.; VASIL'KOV, S.G., kand. tekhn. nauk; YEVNEVICH, A.V., kand. tekhn.nauk; KIPTENKO, A.K., inzh.; LUNDINA, M.G., kand. tekhn.nauk; NAUMOV, M.M., kand. tekhn. nauk; PATRIK, S.A., inzh.; POPOV, L.N., kand. tekhn. nauk; ROGOVOY, M.I., inzh.; SEDOV, V.G., inzh.; SOKOLOV, Yu.B., inzh.; FRANCHUK, K.O., inzh.; KHAYKIN, V.Ya., inzh., nauchnyy red.; CHIBUNOVSKIY, N.G., inzh., nauchnyy red.; NOKHRATYAN, K.A., red. [deceased]; GUZMAN, M.A., red.; GURVICH, E.A., red.; BOROVNEV, N.K., tekhn. red.

[Handbook on the production of structural ceramics]Spravochnik po proizvodstvu stroitel'noi keramiki. Moskva, Gosstroiizdat. Vol.3.[Wall and roofing ceramics]Stenovaia i krovel'naia keramika. Pod red. M.M.Naumova i K.A.Nokhratiana. 1962. 699 p.
(MIRA 16:1)

(Ceramics) (Building materials industry)

POPOV, L. N., prof.

Dyskeratosis of the lip and its relation to the formation of
cancer. Trudy KGMI no.2:79-82 '60.   (MIRA 15:7)

1. Iz kafedry patologicheskoy anatomii - zav. kafedroy professor
L. N. Popov.

(KERATOSIS)   (LIPS--CANCER)

ELINZON, M.P.; VASIL'KOV, S.G.; POPOV, L.N.; NIKOLAYEVA, N.M., red.
        izd-va; SHERSTNEVA, N.V., tekhn. red.

     [Principles of the production of agloporite] Osnovy proizvodstva
     agloporita. Moskva, Gosstroiizdat, 1962. 136 p. (MIRA 15:6)
            (Aggregates (Building materials))
                   (Lightweight concrete)

KARAVANOV, A.G.; POPOV, L.N.; VOLCHEK, V.M.

Diagnosis and excision of calculi in the pancreas. Kaz. med. zhur.
no.6:58-59 N-D '61.   (MIRA 15:2)

1. Kafedra fakultetskoy khirurgii (zav. - prof. A.G.Karavanov)
Kalininskogo meditsinskogo instituta i Kalininskaya oblastnaya
bol'nitsa (glavnyy vrach - A.A.Sokolov).
    (PANCREAS__SURGERY)   (CALCULI)

POPOV, L.N., kand.tekhn.nauk

Stability of fine-grained concretes under varying conditions.
Bet. i zhel.-bet. no.9:410-412 S '61.   (MIRA 14:10)
                    (Concrete) (Weathering)

VOLZHENSKIY, Aleksandr Vasil'yevich, prof.; POPOV, Leonid Nikolayevich,
    kand. tekhn. nauk; CHERKINSKAYA, R.L., red. izd-va; ABRAMOVA, V.A.,
    tekhn. red.

[Repeatedly-ground blended portland cements and concretes made from
them] Smeshannye portlandtsementy povtornogo pomola i betony na ikh
osnove. Moskva, Gos. izd-vo lit-ry po stroit., arkhit. i stroit.
materialam, 1961. 105 p.   (MIRA 14:9)

1. Deystvitel'nyy chlen Akademii stroitel'stva i arkhitektury SSSR
(for Volzhenskiy).
    (Portland cement)   (Concrete)

VOLZHENSKIY, A.V., prof.; POPOV, L.N., kand.tekhn.nauk

High-strength fine grained concretes made with sandy portland cements. Bet. 1 zhel.-bet. no.2:51-55 F '60. (MIRA 13:6)

1. Deystvitel'nyy chlen Akademii stroitel'stva i arkhitektury SSSR (for Volzhenskiy)
(Lightweight concrete)

POPOV, L.I.

...lly summarization of the results of the socialist competition at the Nizhniy Tagil Metallurgical Combine. Metallurg 9 no.11:34-35 N '64.
(MIRA 18:2)

1. Predsedatel' profsoyuznogo komiteta Nizhnetagil'skogo metallurgicheskogo kombinata.

ABRAMOV, S.K., nauchnyy sotr.; NEDRIGA, V.F., nauchnyy sotr.;
ROMANOV, A.V., nauchnyy sotr.; SELYUK, Ye.M., nauchnyy
sotr. Prinimali uchastiye: POPOV, L.N., nauchnyy sotr.;
SMIRNOV,D.N., nauch.sotr.; SHERSHUKOVA,M.A.,red.izd-va;GOL'BERG,
T.M.,tekhn.red.

[Protection of land against inudation and the rise of the
ground water level] Zashchita territorii ot zatopleniia i
podtopleniia [By] S.K.Abramov i dr. Moskva, Gos. izd-vo
lit-ry po stroit., arkhit. i stroit. materialam, 1961. 423 p.
                                          (MIRA 15:4)
1. Vsesoyuznyy nauchno-issledovatel'skiy institut vodosnab-
zheniya kanalizatsii, gidrotekhnicheskikh sooruzheniy i in-
zhenernoy gidrogeologii (for all except Shershukova, Gol'berg).
                    (Hydraulic engineering)

BARANOV, V.A.; ZIBOL'D, F.F.; POPOV, L.N.

Results of hydrological and hydrochemical research in reservoirs
of the Donets Basin. Gidrokhim. mat. 32:122-127 '.61. (MIRA 14:6)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut vodosnabzheniya
kanalizatsii,gidrotekhnicheskikh sooruzheniy i inzhenernoy
gidrogeologii "VODGEO" i Akademiya stroitel'stva i arkhitektury
SSSR, laboratoriya gidrologicheskikh issledovaniy, Moskva.
(Donets Basin—Reservoirs)
(Water—Composition)

VESELOV, Nikolay Grigor'yevich;SKOROKHODOV, A.A., retsenzent;
POPOV, Leonid Pavlovich, red.; SYRCHINA, K.M., red.izd-va;
MAL'KOVA, N.T., tekhn. red.

[Cost of cast iron] Sebestoimost' chuguna. Sverdlovsk, Metal-
lurgizdat, 1962. 51 p.   (MIRA 15:6)
                          (Cast iron—Cost)

OTTSELAYNEN, V.P., zootekhnik; POPOV, L.P., zootekhnik; USTYUGOV, P.G.,
red.; GOLOD, O.V., red.; BEYSHENOV, A., tekhn. red.

[More meat for the country] Bol'she biasa strane. Frunze, Kir-
gizskoe gos.izd-vo, 1961.   79 p.   (MIRA 15:3)

1. Kolkhoz "Niva" Kalininskogo rayona, **Kirgiz (for Ottselaynen)**.
2. Kolkhoz imeni Lenina Alamedinskogo rayona, Chuyskoy doliny,
Kirgiz (for Popov).
                    (Chuya Valley—Meat)

NIKULIN, Vadim Mikhaylovich; KONONOV, A.S., retsenzent; POPOV, L.P.,
red.; SKOROBOGACHEVA, A.P., red. izd-va; MAL'KOVA, N.T.,
tekhn. red.

[Economics and organization of the manufacture of refractories]
Ekonomika i organizatsiia proizvodstva ogneuporov. Sverdlovsk,
Metallurgizdat, 1962. 200 p.   (MIRA 15:7)
                              (Refractories industry)

ZAKHAROV, A.F.; PETROV, G.A.; NOVIKOV, M.D.; POPOV, L.P.; TORSHILOV, Yu.V.;
    GOLOKHMATOV, S.N.; GUSAROV, A.N.; KOVAL'CHUK, N.P.

Potentialities for increasing labor productivity in the
open-hearth process. Stal' 21 no.6:560-562 Je '61. (MIRA 14:5)

1. Nizhne-Tagil'skiy metallurgicheskiy kombinat.
    (Open-hearth furnaces—Equipment and supplies)

POPOV, L. S.

O vliianii fiuzeliazha i khvostovogo opereniia samoleta na vibratsii kryla. Moskva, 1938. 44 p., tables, diagrs. (TSAGI. Trudy, no. 343)

Title tr.: Effect of the fuselage and tail surfaces of an aircraft on vibrations of the wing.

QA911.M65 no. 343

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of Congress, 1955.

PoPou,L.S.

PARKHOMOVSKII, IA. M., and L. S. POPOV.

O vliianii inertsii provodki upravleniia na vibratsii samoleta i o raschete
vesovoi balansirovki eleronov i rulei. (Tekhnika vozdushnogo flota, 1940,
no. 7, p. 72-81, diagrs.)

Title tr.: Effect of inertia of control system linkage on the vibration
of aircraft, and the design of dynamic balance of rudder elevator and
ailerons.

<div align="center">TL504.T4   1940</div>

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of
     Congress, 1955.

POPOV, L. S.

Izmenenie kriticheskoi skorosti flattera kryla pri uvelichenii ego udlineniia, ploshchadi i razmakha. (Tekhnika vozdushnogo flota, 1945, no. 2, p. 1-2)

Title tr.: Change in the critical speed of wing flutter with the increase of length, area, and span.

TL504.T4   1945

SO: Aeronautical Sciences and Aviation in the Soviet Union, Library of
     Congress, 1955.

POPOV, LEV SERGEYEVICH.

Sci. Assoc., Aerohydro-dynamics Inst. im. N. Ye. Zhukovskiy, -1949-.

"Theoretical and Experimental Investigations in the Field of Mechanics," (publ) 1948.

DEREVENKO, V.V.; POPOV, L.S.; KOZLOV, Ye.I.

Planetary multiroller ear snapping apparatus. Trakt. i sel'-
khozmash. no.5:21-22 My '64.
(MIRA 17:6)

1. Kubanskiy sel'skokhozyaystvennyy institut.

POPOV, L.S.

Aqua-pulper replacing the clay mixer. Bum.prom. 35 no.1:21 Ja '61.
(MIRA 14:3)

1. Nachal'nik kartonno-bumazhony fabriki Klaypedskogo kombinata.
(Klaypada—Papermaking machinery)

POPOV, L.V.   DECEASED

S$_{EE}$ ILC

PHYS$_{ICS}$

POPOV, L. V.

Turkmenistan - Mosquitoes

Epidemiological significance of various species of Anopheles in Turkmen S.S.R.   Izv.
Turk.fil. AN SSSR No. 1, 1951.

POPOV, L. V.

"The Water Characteristics of Forest Litter and Its Effect on the Appearance and Acclimatization of Germinating Pines and Firs." Cand Biol Sci, Leningrad Order of Lenin State U imeni A. A. Zhdanov, Leningrad, 1954. (KL, No 1, Jan 55).

Survey of Scientific and Technical Dissertations Defended at USSR Higher Educational Institutions (13)
SO: Sum. No. 598, 29 Jul 55

USSR / Forestry. Biology and Typology of the Forest.   K-2

Abs Jour: Ref Zhur - Biologiya, No. 1, 1958, 1316

Author   :   Popov, L.V.

Inst   :   Eastern Siberian Branch of the Acad Sci USSR

Title   :   The Influence of Substratum Moisture on Germina-
             tion of Pine and Spruce Seeds

Orig Pub: Tr. Vost.-Sib. fil. Akad. Nauk SSSR, 1957, No. 5,
             116-121

Abstract: Experiments have determined that for pine and
             spruce shoots to appear in the ground cover of
             spruce-whortleberry forests, it is necessary for
             the moisture content of the cover to exceed that
             of sand 28 /sic/ times (in terms of absolute
             dry weight). Optimum moisture of the cover is
             1.8 times higher than of the sand.

Card 1/1

POPOV, L.V.; SHUBIN, V.I.

Effect of forest litter on surface soil temperature in clearings of
the central taiga zone. Izv. Sib. otd. AN SSSR no.7:102-113   '58.
                                                        (MIRA 11:9)

1. Vostochno-Sibirskiy filial AN SSSR i Karel'skiy filial AN SSSR.
                (Soil temperature) (Forest litter)

POPOV, L.V.

Studying the capillary properties of forest litter. Izv. Sib. otd.
AN SSSR no.10:117-123 '58.   (MIRA 11:12)

1.Vostochno-Sibirskiy filial AN SSSR.
                    (Forest litter) (Capillarity)

POPOV, L.V.

Genetic classification of forest types. Izv. Sib. otd. AN SSSR
no.7:96-104 '59.   (MIRA 12:12)

1.Vostochno-Sibirskiy filial Sibirskogo otdeleniya AN SSSR.
          (Forests and forestry--Classification)

SHUBIN, V.I.; POPOV, L.V.

        Studies concerning cultivation practices in young plantations
on clear-cut areas of southern Karelia. Trudy Kar.fil. AN
SSSR no.16:47-81 '59.   (MIRA 13:4)
           (Karelia--Reforestation)

GORSHKOV, V.A.; PODMOSHENSKIY, I.V.; POPOV, L.V.

Use of heavy elements in a powerful capillary light source.
Opt.nauch.fot. 9:167-170 '64.

(MIRA 18:11)

ACC NR: AP7006920   SOURCE CODE: UR/0237/67/000/001/0022/0024

AUTHOR: Demidov, M. I.; Podmoshenskiy, I. V. (Candidate of sciences);
Popov, L. V.; Ushakova, D. P.

ORG: none

TITLE: The EV-64 high-intensity light pulse source

SOURCE: Optiko-mekhanicheskaya promyshlennost', no. 1, 1967, 22-24

TOPIC TAGS:ʌ electric lamp, light source, pulse lamp, pulse light source, light
pulse generator/EV64 pulse lamp, EV64 pulse generator

ABSTRACT:
    The EV-64 high-intensity light pulse source, a new version of the EV-39,
    described earlier by Demidov and others (Optiko-mekhanicheskaya promyshlennost',
    no. 1, 1960), is presented. The EV-type light pulse sources are based on
    capillary discharge with the evaporation of walls. The EV-64 has a
    capillary 2 mm in diameter in a textolite plate 10 mm thick. The capillary
    is mounted in a discharge chamber 1000 m long and 508 mm high (see Fig. 1).
    The pulses from a discharge current of 9 to 10 kamp between graphite elec-
    trodes 14 mm in diameter, fed from a battery of capacitors at a rated

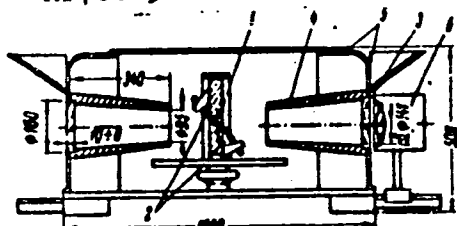Card 1/2   UDC: 535.891

ACC NR: AP7006920

Fig. 1. Discharge chamber of the EV-64
light pulse generator:

1 - Plate with the capillary; 2 - electrodes;
3 - protective plates; 4 - damper; 5 - ex-
haust holes; 6 - lens.

voltage of 5000 v, produce an output of radiative power of 82 wt at a
pulse duration of 1.4 msec. The power supply circuitry, which is composed
of a system of LCR circuits and primer discharge gaps, is described in
detail. The pulse shape is close to the π-form obtained by the super-
position of LC and RC circuit currents. The pulse duration can be varied
by positioning an auxiliary 12-mm discharge gap on two parallel copper
bars. The pulse amplitude reproducibility was within about 1%; that of
the spectral brightness at 0.9 of the maximum level was better than 3%.
The reproducibility of the pulse duration was around 7%. It is noted that
the 1.5-msec pulse duration is the limit under given conditions, due to
the burnout of the diameter of the discharge capillary. Special methods
for keeping the diameter of the discharge channel constant are considered
necessary for an extension of the pulse duration. Orig. art. has: 3
figures.   [FP]

SUB CODE: 20/   SUBM DATE: 23Feb66/   ORIG REF: 003/   ATD PRESS: 5117

Card 2/2

L 43724-66   EWT(1)   IJP(c)   AT

ACC NR: AP6030716   SOURCE CODE: UR/0368/66/005/002/0188/0194

AUTHOR: Popov, L. V.

ORG: none

TITLE: Interaction of a hot plasma with a cold gas as a means of obtaining population inversion

SOURCE: Zhurnal prikladnoy spektroskopii, v. 5, no. 2, 1966, 188-194

TOPIC TAGS: gas plasma interaction, hot plasma, cold gas, hydrogen, population inversion

ABSTRACT: Interaction of a hot plasma with a cold gas (hydrogen) was considered as a means of obtaining population inversion. Due to inelastic atomic collisions, selective excitation of hydrogen to a certain energy level with the quantum number n takes place. The hydrogen atoms can abandon the excited state by way of the following processes:

$A(n) + e \rightarrow A^{+} e + e$ (ionization),
$A(n) + e \rightarrow A(m) + e$ (collision of the first kind),
$A(n) + e \rightarrow A(k) + e$ (collision of the second kind),
$A(n) \rightarrow A(k) + h\nu$ (spontaneous emission).

Card 1/3   UDC: 535.34:533.9

L 43724-66

ACC NR: AP6030716 O

Under the above conditions (absorption and photoionization neglected)
the population N_n of the n-th level of a hydrogen atom is given by the
following equation:

$$\frac{\partial N_n}{\partial t} = -\left(\sum_{k<n} A_{nk}N_n + W_{ni}N_n + \sum_{m>n} W_{nm}N_n +\right.$$

$$\left. + \sum_{k<n} W_{nk}N_n\right) + \sum_{m} A_{mn}N_m + \sum_{k} W_{kn}N_k + \sum_{m} W_{mn}N_m +$$

$$+ \delta_{in}\sigma \bar{v}Nn_0, \quad \delta = \begin{cases} 0, & l \neq n, \\ 1, & l = n, \end{cases} \tag{1}$$

$$\sum_{n} N_n = n_0. \tag{2}$$

where A is the probability of radiative transition and W is the proba-
bility of collision transition. The analysis of equation (1) shows that
the pumping rate determines the absolute value of level population; the
value of the relative population depends on the ratio between the
collision and radiative transition probabilities. Substantial popula-
tion inversion in hydrogen can be achieved at electron concentrations
of 10^{13} cm^{-3}, although the same is impossible at higher (10^{16} cm^{-3})

Card 2/3

L 43724-66

ACC NR: AP6030716

electron concentrations. The most favorable conditions for the selective excitation of hydrogen due to atomic collisions can be achieved at lower electron concentrations and smaller values of n. Orig. art. has: 2 figures, 3 tables, and 12 formulas.   [YK]

SUB CODE: 20/ SUBM DATE: 16Nov65/ ORIG REF: 002/ OTH REF: 007
ATD PRESS: 5075

Card 3/3   hs

L 15280-66   EWT(1)/EWT(m)/T/EWP(t)/EWP(b)   IJP(c)   JL/WW/GG

ACC NR: AT6001402   SOURCE CODE: UR/3180/64/009/000/0167/0170

AUTHOR: Gorshkov, V. A.; Podmoshenskiy, I. V.; Popov, L. V.

ORG: none

TITLE: The use of heavy elements in power capillary light source

SOURCE: AN SSSR. Komissiya po nauchnoy fotografii i kinematografii. Uspekhi nauchnoy fotografii, v. 9, 1964. Vysokoskorostnaya fotografiya i kinematografiya (High-speed photography and cinematography), 167-170 and insert facing page 168

TOPIC TAGS: light source, capillary light source, electric discharge

ABSTRACT: For the generation of continuous spectra from capillary sources the source must have a large coefficient of continuous absorption. Large pressures are required within the capillary, i.e., low efflux velocity. This can be achieved by introducing into the capillary walls elements with atomic weights of the order of 100 — 200 which reduce the efflux velocity from 12 to 2 — 3 km/sec. The final capillary tube used for testing had the form shown in Fig. 1.

Card   1/2

L 15280-66.

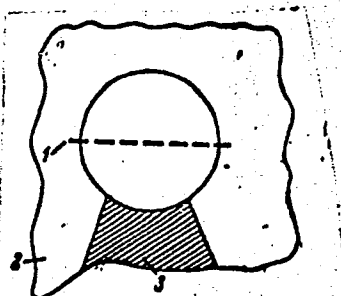ACC NR: AT6001402   -2

Fig. 1 Capillary for the determination of the relative emission capability of light and heavy atoms (end view). 1 - position of the spectroscope slit, 2 - textolite; 3 - KRS-5 monocrystal containing TlI and TlBr compounds.

An analysis of the experimental data shows that the use of heavy elements in strong capillary light sources does indeed increase the pressure within the capillary. The emissivity of heavy plasmas containing Cd, I, Tl, and Br atoms is 4 — 6 times larger than the emissivity of a plasma containing only H, C, and O. Heavy atoms allow, consequently, the use of short capillaries leading to light sources close to surface radiators. Orig. art. has: 2 formulas and 2 figures.

SUB CODE: 14, 20 / SUBM DATE: none / ORIG REF: 002 / OTH REF: 001

Card 2/2 mjs

BACHURIN, G.V.; POPOV, L.V.

Problems in efficient utilization and conservation of the water
resources of rivers in Irkutsk Province. Dokl. Inst. geog. Sib. i
Dal'. Vost. n-.6:29-38 '64.
(MIRA 18:10)

L 46322-65   EWT(1)/EWA(h)   Peb

ACCESSION NR: AP5011887   UR/0120/65/000/002/0154/0157

AUTHOR: Lebedev, N. N.; Moiseyev, B. N.; Popov, L. V.   28

TITLE: Electron photorecorder with a light amplifier and time marker   β

SOURCE: Pribory i tekhnika eksperimenta, no. 2, 1965, 154-157

TOPIC TAGS: photorecorder, photorecording, image converter, image intensifier, time
marker

ABSTRACT: An electron-optical photorecorder is described which makes it possible
to record fast luminous processes with scanning speeds of 10—500 km/sec. The test
phenomenon is photographed from the screen of an image intensifier which operates
in series with an input image-converter tube and a photocamera attachment (1:1.5,
F = 5 cm). A time marker provides a time scale along with a process record which
makes it possible to determine the instantaneous scanning speed at any place on the
output screen of the image converter. The image intensifier (a light amplifier)
enhances the aperture ratio of the entire system, affecting its optical resolution
only slightly. Orig. art. has: 5 figures.   [03]

ASSOCIATION: none

Card 1/2

L 46322-65

ACCESSION NR: AP5011887		SUB CODE: EC,OP
SUBMITTED: 09Mar64	ENCL: 00	ATD PRESS: 4002
NO REF SOV: 008	OTHER: 000	

Card 2/2

SHUBIN, V.I.; POPOV, L.V.

Using organic fertilizers in forest nurseries. Trudy Kar. fil.
AN SSSR no.25:99-108 '61
(MIRA 14:9)
(Forest nurseries--Fertilizers and manures)

POPOV, Leonid Vasil'yevich; SIN'KEVICH, Mikhail Stepanovich; SHUBIN, Vladimir Ivanovich; PANKRASHOV, A.P., red.; FOD"EL'SKAYA, K.M., tekhn. red.

[Reforestation by seeding in cutover areas] Posev lesa na vyrub-kakh. Petrozavodsk, Gos. izd-vo Karel'skoi ASSR, 1961. 108 p.
(MIRA 15:2)

(Reforestation)

POPOV, L.V.; RODE, A.A., doktor biol.nauk, prof., otv.red.; PAVLOV, A.N.,
red.izd-va; POLYAKOVA, T.V., tekhn.red.

[Methods of determining soil moisture]. Metody opredeleniia vlazhnosti
pochv. Moskva, Izd-vo Akad. nauk SSSR, 1960. 95 p. (Akademiia nauk
SSSR. Vostochno-Sibirskii filial, Irkutsk. Trudy, no.31).
(MIRA 13:12)

(SOIL MOISTURE)

POPOV, L. V.

Brief survey of methods of determining soil moisture. Trudy Vost.-
Sib.fil.AN SSSR no.17:149-175 '59.   (MIRA 13:8)
                    (Soil moisture)

POPOV, L.V.

Forest-type zones in Irkutsk Province. Izv. Sib. otd. AN SSSR
no.12:103-114 '62.   (MIRA 17:8)

1. Institut geografii Sibiri i Dal'nego Vostoka Sibirskogo
otdeleniya AN SSSR, Irkutsk.

GEORGIEV, K.N., inzh.; POPOV, L. V., inzh.

Asynchronous generators with saturated magnetic systems.
Mashinostroene 12 no. 11: 16-18   N '63.

POPOV, L.V., inzh.; SEROV, A.A. inzh.

Experience in using cables at 110 kv. potentials. Energetik
11 no.10:30-34 O '63.
(MIRA 16:11)

GEORGIEV, K.N., inzh.; POPOV, L.V., inzh.

A method of determining the dimensions of the excitation stab-
ilizer of a self-exciting asynchronous generator. Mashinostroene
12 no.4:27-29 Ap '63.

POPOV, L.V., inzh.; TRAKHTER, L.P., inzh.; YURCHUK, V.A., inzh.

Networks for the electric power supply of oil fields. Prom.energ.
17 no.5:45-46 My '62.
(Electric power distribution)   (Oil fields)   (MIRA 15:5)

S/181/62/004/010/053/063
B102/B104

AUTHORS: Popov, L. Ye., Bol'shakov, M. A., and Aleksandrov, N. A.

TITLE: Correlation between the effect of jump-like deformation and
             anomalous rate dependence of deformation resistance

PERIODICAL: Fizika tverdogo tela, v. 4, no. 10, 1962, 2972 - 2974

TEXT: Detailed discussion is devoted to the fact that jump-like deformation
occurs in that range of deformation rates v wherein the deformation stress
decreases with increasing deformation rate (Rev. met. 47, no. 7, 547,
1950; Acta met., 6, no. 9, 598, 1958; Rev. met., 50, no. 12, 833, 1953)
and to some features concerning N. N. Davidenkov's condition $v_2 > v_1$,

$\sigma_2 < \sigma_1$ (FTT, 3, 8, 2458, 1961). Taking $\sigma(v)$-graphs of a Ni-Cr alloy with

28.5% Cr as an example it is shown that this condition need not be
satisfied, jump-like deformation being observed also without anomalous
rate dependence of deformation resistance. From measurements of the $\sigma(v)$
curves at 250°C in the region of jump-like deformation with deformation
rates of 150 - 1000%/min it was found that, anyway in the case of the Ni-Cr

Card 1/2

Translation from: Referativnyy zhurnal. Metallurgiya, 1958, Nr 11, p 224 (USSR)

SOV/137-58-11-23411

AUTHORS: Popov, L. Ye., Karpov, G. I.

TITLE: On the Mechanism of Plastic Deformation of Ni-Cr Alloys in the Ni₃Cr Region (K voprosu o mekhanizme plasticheskoy deformatsii nikel'-khromistykh splavov v oblasti sushchestvovaniya soyedineniya Ni₃Cr)

PERIODICAL: Izv. vyssh. uchebn. zavedeniy. Fizika, 1958, Nr 1, pp 163-167

ABSTRACT: Changes in the electrical resistivity (ER) of alloys of Ni with 11.2 at· per cent (I) and 22 at·% Cr (II) were investigated after the alloys were subjected to plastic deformation (D) at different temperatures. After drawing, specimens of II which were given the form of a wire 1.1 m (sic!) in diameter, were rapidly heated to 950°C; after soaking at this temperature for a period of two hours they were quenched in water. The heating was carried out in vacuum. After analogous heat-treatment procedures, specimens of I were allowed to cool to room temperature together with the quartz tubes in which they had been contained while in the oven; thus the rate of cooling amounted to several tens of degrees [Centigrade] per minute. Specimens of I were elongated by 3, 5, 15, and 30% at room temperature and at temperatures of 100

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SOV/137-58-11-23411

On the Mechanism of Plastic Deformation of Ni-Cr Alloys in the Ni_3Cr Region

and 380°. Specimens of II were subjected to the same degree of deformation but at temperatures of 100, 200, and 380°. After the deformation, the ER of the alloys at room temperature was measured with the aid of a Kelvin double bridge. The ER value was obtained by averaging the ER values for five specimens. It is established when the D proceeds stepwise that the rate of increase of the ER in the case of both alloys is at a maximum when the degree of D is small and that it decreases sharply thereafter. At higher temperatures the decrease in rate occurs at smaller deformations, the magnitude of the ER, however, becoming greater at that point. As shown by curves representing the ER under gradual D (200° and room temperature in the case of I and 100° in the case of II), the ER diminishes as the degree of the D is increased. It is concluded that the stepwise character of the D in alloys investigated is connected with the hardening effect of a Ni_3Cr compound which is formed during the D. It is demonstrated that, as the cooling rate of II to 950° [sic ! Probably intended to read "down from"; Transl. Ed. Note] is reduced, the flow stresses encountered at a temperature of 400° increase by 17-20%. This phenomenon is also linked with the hardening influence of the Ni_3Cr compound. The fact that similar phenomena were observed in both I and II indicates that a Ni_3Cr compound may exist beyond the boundaries of stoichiometric relationships.

L. G.

Card 2/2

POPOV, I.Ye.

Equivalence of the effect of speed and deformation temperature
on the plastic deformation process. Izv. vys. ucheb. zav.; fiz.
no.3:91-99 '58.   (MIRA 11:9)

1. Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosuni-
versitete imeni V.V. Kuybysheva.
                  (Deformation (Mechanics))

SOV/139-58-6-10/29

AUTHORS: Popov, L.Ye. and Aleksandrov, N.A.

TITLE: Dependence of Flow Stress in Nickel on Deformation
              Velocity and Temperature (Zavisimost' napryazheniya
              techeniya nikelya ot skorosti i temperatury deformatsii)

PERIODICAL:Izvestiya Vysshikh Uchebnykh Zavedeniy, Fizika,
           1958, Nr 6, pp 66-72 (USSR)

ABSTRACT: Two series of experiments were carried out in an
              apparatus constructed by L.I.Vasil'yev, on nickel N1;
              one series at deformation velocities of 1440, 350, 70,
              38, 26, 8.2 and 4.8% per hour, all at a temperature of
              $414^{\circ}C$, the other series at a constant deformation
              velocity of 51% per hour and at temperatures varying
              from 350 to $473^{\circ}C$. Stress-deformation curves of both
              sets are reproduced. Curves of flow stress against
              log velocity and against T_1 (T = temperature) indicate
              that the activation energy is about 66000 cal/mol.
              Thanks are expressed to Professor M.A.Bol'shanina for
              discussion of results. There are 5 figures and

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SOV/139-58-6-10/29

Dependence of Flow Stress in Nickel on Deformation Velocity and Temperature

15 references of which 3 are Soviet and 12 English.

ASSOCIATION:Sibirskiy Fiziko-Tekhnicheskiy Institut pri Tomskom Gosuniversitete imeni V.V.Kuybysheva (Siberian Physico-Technical Institute, Tomsk University imeni V.V.Kuybyshev)

SUBMITTED: 14th April 1958

Card 2/2

Po Pov, L. Ye.

18(7)
PHASE I BOOK EXPLOITATION   SOV/3355

Akademiya nauk SSSR. Institut metallurgii. Nauchnyy sovet po
problteme zharoprochnykh splavov

Issledovaniya po zharoprochnym splavam, t. IV (Studies on Heat-r:-
sistant Alloys, vol. 4), Moscow, Izd-vo AN SSSR, 1959. 400 p.
Errata slip inserted. 2,200 copies printed.

Ed. of Publishing House: V. A. Klimov; Tech. Ed.: A. P. Guseva;
Editorial Board: I. P. Bardin, Academician; G. V. Kurdyumov,
Academician; N. V. Agayev, Corresponding Member, USSR Academy of
Sciences; I. A. Oding, I. M. Pavlov, and I. P. Zudin, Candidate
of Technical Sciences.

PURPOSE: This book is intended for metallurgists concerned with
the structural metallurgy of alloys.

COVERAGE: This is a collection of specialized studies of various
problems in the structural metallurgy of heat-resistant alloys.
Some are concerned with theoretical principles, some with des-
criptions of new equipment and methods, others with properties
of specific materials. Various phenomena occurring in various
specified conditions are studied and reported on. For details,
see Table of Contents. The articles are accompanied by a num-
ber of references, both Soviet and non-Soviet.

TABLE OF CONTENTS:

Studies (Cont.)   SOV/3355

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Copper Solid Solutions   36

Lariman, R. M., M. P. Komarova, V. I. Dobatkin, and
Ye. I. Koropenko. A Study of Structural Transformations
in Heat-resistant Copper-Aluminum Alloys   41

Makagon, M. B., V. Ye. Panin, and V. P. Sukhovarov. Con-
cerning the Stimulating Effect of Stress on Weakening
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Rozenberg, V. M. Relationship Between Deformation in the
Grains and Displacement along the Boundaries During Creep
in Nickel   58

Popov, L. Ye. On the Equivalence of the Effect of Rate and
Temperature of Strain on the Process of Plastic Flow   64

Dekhtyar, I. Ya., V. S. Mikhalenkov, and K. G. Madatova.
Card 3/12

POPOV, L. Ye., Cand Phys-Math Sci (diss) -- "Investigation of the nature of the

temperature-speed relationship in the deformation-resistance of nickel and

its alloys with chromium". Tomsk, 1959. 5 pp (Tomsk State U im V. V. Kuybyshev),

150 copies (KL, No 11, 1960, 128)

24.7500

65703

AUTHOR: Popov, L.Ye.

SOV/139-59-2-2/30

TITLE: On the Problem of the Temperature-Speed Dependence of
            the Flow Stresses of Nichromes

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1959,
            Nr 2, pp 11-21 (USSR)

ABSTRACT: During the last two decades a number of phenomena were
            detected and studied at temperatures below 600°C in alloys
            of the system Ni-Cr containing 10 to 30 at% Cr which
            indicate transformations, the nature of which has not been
            fully clarified. During tempering of hardened alloys of
            this type, an anomalous increase in the electric
            resistance is observed and H.Thomas (Ref 2) detected a
            similar phenomenon in a number of other alloys. During
            cold deformation on nichromes which have been cooled slowly
            after heating at high temperature or aged in the
            temperature range 300 to 600°C, a decrease in the electric
            resistance was observed. The drop in the electric
            resistance after considerable degrees of deformation
            reaches 10 to 20% (Ref 2, 4, 5) and this effect was also
            observed for alloys quenched in water after heating to a
Card 1/3   high temperature. So far, there is no generally accepted

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SOV/139-59-2-2/30

On the Problem of the Temperature-Speed Dependence of the Flow Stresses of Nichromes

view on the nature of the transformations which proceed in alloys of solid solutions of the system Ni-Cr at temperatures below 600°C. Most authors consider that the anomalous temperature dependence of the electric resistance and of other physical properties of these alloys are due to the formation of non-uniformities of the near-order type. So far, no substantiated views exist relating to the stechiometric ratio of the atoms of the components in ranges with an ordered distribution of the atoms. The author of this paper investigated the temperature dependence of the flow stresses of a nickel alloy (nichrome wire) containing 16.6% Cr, 0.34% Si, 0.014% C, 0.03% S, 0.4% Fe, rest Ni in the temperature range 20 to 830°C for a constant speed of 38% per hour and also the speed dependence of flow stresses at 777°C. In the experiments, the speed of deformation was varied between 5% per hour and 1500% per hour; the temperature was varied between 20°C and 827°C; above 627°C the tensile stresses were

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POPOV, L.Ye.

Equivalence of the effect of speed and temperature of defor-
mation on the process of plastic flow. Issl.po zharopr.splav.
4:64-70 '59.   (MIRA 13:5)
          (Deformations(Mechanics))
     (Metals, Effect of temperature on)

POPOV, L.Ye.; BUTKEVICH, L.M.; ALEKSANDROV, N.A.

Role of the viscous motion of a dislocation in the temperature-dependent resistance to deformation in solid solutions of substitution. Izv. vys.ucheb.zav.;fiz.no. 2:126-130 '64.

(MIRA 17:6)

1. Sib.........tekhn'.........iv institut pri Tomskom gosudarstvennom universitete imeni Kuybysheva.

POPOV, L.Ye.; ALEKSANDROV, N.A.

Effect of the rate and temperature of deformation on flow stresses
in nickel. Izv.vys.ucheb.zav.; fiz. no.6:66-72 '59.

(MIRA 12:4)

1. Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosuniversi-
tete im. V.V. Kuybysheva.

(Nickel--Testing)

/8. 1250

1. (6)

AUTHORS: Popov, L. Ye., Karpov, G. I.

67912
SOV/20-129-5-18/64

TITLE: The Influence of the Temperature of Hardening on the Process
of the Formation of the Short-range Order in a Ni-Cr Alloy

PERIODICAL: Doklady Akademii nauk SSSR, 1959, Vol 129, Nr 5, pp 1028-1030
(USSR)

ABSTRACT: The authors investigated the influence of hardening temperature
on the kinetics of the formation of the short-range order
(K-state) in an Ni alloy with 16.6 percents Cr by weight at
low-temperature precipitations. The samples, produced in form
of wires of 1 mm diameter, were subdivided into several portions,
each of which was annealed in vacuum for 4 hours at 950°. The
samples were then cooled and heated respectively in a furnace
to hardening temperature (650; 750; 950; 1000; 1100°), left at
these temperatures for from 5 to 60 minutes, after which they
were quenched in water. Finally, the samples were tempered at
300°. After 5; 15; 30 minutes, 1 and 2 hours they were taken
out of the furnace and their electric resistivity was measured
at room temperature by means of a double Thomson bridge. At
the beginning of annealing (during about half an hour) electric

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SOV/20-129-5-18/64

The Influence of the Temperature of Hardening on the Process of the Formation of the Short-range Order in a Ni-Cr Alloy

resistivity increases rapidly, but later more slowly. The resistivity of the hardened alloy immediately after hardening, if this takes place at 850°, is the lowest. The decrease of electric resistivity during the rise in hardening temperature from 650° to 850° is apparently interrelated with the decrease in the degree of the short-range order. At higher temperatures this decrease in electric resistivity is equalized by the increase of electric resistivity due to the increase in the concentration of tempering vacances. The increase Δ$ of electric resistivity increases monotonously at low-temperature hardening with increasing hardening temperature. At high hardening temperatures this increase, however, becomes slower. By comparing the isothermal lines of electric resistivity determined at various temperatures, also the activation energy of the migration of tempering vacances was determined. The higher the hardening temperature, the more rapidly will one and the same degree of the short-range order be attained. In the case of isothermal tempering at 200° and 250° after quenching from 1000°, the activation energy is 37 kcal/mole. Similar activation energy values were determined at 200; 250; 280; 300° after hardening.

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SOV/20-129-5-18/64

The Influence of the Temperature of Hardening on the Process of the Formation of the Short-range Order in a Ni-Cr Alloy

from various temperatures. The average activation energy was 38.7 ± 2 kcal/mole. There are 4 figures and 9 references, 3 of which are Soviet.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy nauchno-issledovatel'skiy institut pri Tomskom gosudarstvennom universitete im. V. V. Kuybysheva (Siberian Scientific Research Institute of Physics and Technology of Tomsk State University imeni V. V. Kuybyshev)

PRESENTED: August 6, 1959, by G. V. Kurdyumov, Academician

SUBMITTED: July 29, 1959

Card 3/3

69429

S/139/60/000/01/003/041

18,8200

E073/E335

AUTHORS: Popov, L.Ye. and Aleksandrov, N.A.

TITLE: Sudden Deformation in Alloys of the System Nickel-chromium

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy, Fizika, 1960, Nr 1, pp 16 - 22 (USSR)

ABSTRACT: One of the features of alloys in which transformations take place is the nonuniform character of the deformation at temperatures below the critical transformation temperature. In the temperature range in which the deformation is nonuniform there are anomalies in the speed and temperature dependence of the mechanical properties. It is reasonable to assume that there is a close relation between these phenomena and therefore study of the nature of sudden deformation is of interest from the point of view of elucidating the mechanism of strengthening of alloys as a result of transformations. In earlier investigations of the speed and temperature dependence of the mechanical properties of alloys containing solid solutions of the system Ni-Cr, it was found that within

Card1/6   a large range of temperatures the deformation occurs in

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E073/E335

Sudden Deformation in Alloys of the System Nickel-chromium

jumps (Ref 9). In the present work, this sudden jumpy deformation was investigated in detail for an alloy of the following composition: Cr, 16.6%, Si 0.34%, C 0.014%, S 0.03%, Fe 0.4%. rest Ni.
The 1 $\pm$ 0.02 mm dia, 85 mm long specimens were quenched in water after soaking for 2 hours at 950 $^\circ$C in vacuum; the average grain diameter was 0.02 mm. The deformation was at the rate of 38% per hour on a tensile test machine. The temperature was measured by means of chromel-alumel thermocouple and the flow curves were recorded photo-graphically. The continuous deformation changes into sudden deformation at temperatures above 150-200 $^\circ$C; the higher the temperature the lower is the degree of deformation at which the deformation becomes sudden. Thus, at 153 $^\circ$C the continuous deformation changes into sudden deformation when the reduction reaches approximately 20%; at 270 $^\circ$C this change occurs for a reduction of 5%. at 300 $^\circ$C it occurs for a reduction of 0.1-0.2% in excess of the elastic deformation, whilst at 400 to 500 $^\circ$C the sudden deformation begins immediately after the elastic one.

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E073/E335

Sudden Deformation in Alloys of the System Nickel-chromium

The indicator diagrams taken at 160 to 230 $^{\circ}$C (Figure 1) show that the changes in the load with increasing degree of strain become nonuniform. In individual sections of the diagram the inclination angle relative to the abscissa is much larger than the average steepness; the strain with decreasing load lasts 2 to 3 seconds. At 300 to 500 $^{\circ}$C the extension diagram (Figure 2) consists of sharp rises and appreciable drops in the load; at 300 $^{\circ}$C the duration of the drop in the load is several tenths of a second whilst at temperatures above 300 $^{\circ}$C the drop in the load lasts such a short time that it could not be determined. In the temperature range 620 to 640 $^{\circ}$C the jumps are observed from the very beginning of the deformation but even at low degrees of deformation the jumpy deformation is superseded by a continuous deformation with small individual jumps (Curve 1, Figure 3) or without any jumps at all; at temperatures above 650 $^{\circ}$C the deformation is on the whole continuous. The results indicate that in the temperature range between 200 and 600 $^{\circ}$C a process takes place which leads to strengthening of the alloy. This

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Sudden Deformation in Alloys of the System Nickel-chromium

temperature range largely coincides with the range of temperatures (300 to 700 $^\circ$C) in which anomalous temperature dependence of the physical properties is observed for Ni-Cr solid solution alloys. Data in the literature (Refs 7,8) relating to the temperature dependence of the hardness and microhardness of similar alloys in the temperature range 300 to 700 $^\circ$C indicate that a strengthening process does occur and that this process is diffusional in character. The same process causes the jumpy character of the deformation of the alloy, as can be seen from the fact that the temperature range in which jumpy deformation takes place coincides with the temperature range in which the flow stresses are only slightly dependent on the temperature. The same process which brings about nonuniform deformation also leads to an increase of the electrical resistance. Nonuniform deformation is accompanied by an increase and uniform deformation by a decrease, in the electrical resistance. The rate of increase in the nonuniformity of deformation increases with increasing temperature, which indicates that the process is diffusional in character.

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E073/E335

Sudden Deformation in Alloys of the System Nickel-chromium

An increase in the electrical resistance during heating of hardened nickel alloys (nickel solid solutions) is due to the formation in the alloy of nonuniformities of the short-range order type (Ref 8). Therefore it can be assumed that jumpy deformation of the investigated alloy and the temperature dependence of the flow stresses are due to the formation of a short-range order in the crystal lattice. Plastic deformation accelerates this process; the same effect of increase in the electrical resistance is reached hundreds and thousands of times faster during deformation than in the case of annealing at the same temperature without applying any load. The fact that deformation at low temperatures leads to a drop in the electrical resistance indicates that the short-range order can be disrupted by means of plastic deformation. On the basis of these results the mechanism of a jumpy deformation can be considered as a superposition of the diffusion process of formation of a short-range order and the process of disruption of this order as a result of plastic deformation.

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S/139/60/000/01/003/041
E073/E335
Sudden Deformation in Alloys of the System Nickel-chromium

There are 5 figures and 11 references, 3 of which are English and 8 Soviet.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosudarstvennyy universitete imeni V.V. Kuybysheva (Siberian Physico-technical Institute, Tomsk State University imeni V.V. Kuybyshev)

SUBMITTED: March 24, 1959

Card 6/6

POPOV, L.Ye.; KOZLOV, E.V.

Slowing down of dislocations in superstructures.   Izv. vys,
ucheb. zav.; fiz. 8 no.4:11-16 '65.   (MIRA 18:12)

1. Sibirskiy fiziko-tekhnicheskiy institut imeni V.D. Kuznetsova.
Submitted June 6, 1964.

POPOV, L.Ye.; KOZLOV, E.V.; KOZHEMYAKIN, N.V.

Theory of concentration inhomogeneities along the antiphased
boundaries in ordered solid solutions. Izv. vys. ucheb.
zav.; fiz. 8 no.1:129-134 '65.
(MIRA 18:3)

1. Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom
gosudarstvennom universitete imeni Kuybysheva.

KOZLOV, E.V.; POPOV, L.Ye.

Theory of the yield point of ordered solid solutions. Fiz. me :.
i metalloved. 18 no.6:939-940 D '64.

(MIRA 18:3)

1. Sibirskiy fiziko-tekhnicheskiy institut.

POPOV, L.Ye.; PANIN, V.Ye.

Detachment of a split dislocation from the Suzuki atmosphere.
Fiz. met. i metalloved. 19 no.4:624-626 Ap '65.

(MIRA 18:5)

1. Sibirskiy fiziko-tekhnicheskiy institut.

POPOV, L.Ye.; KOZLOV, E.V.

Theory of the hardening of ordered solid solutions. Fiz. met. i metalloved. 17 no.5:755-759 My '64.   (MIRA 17:9)

1. Sibirskiy fiziko-tekhnicheskiy institut.

L 729-65   EWT(m)/EWP(q)/ P(b)   AEDC(a)/ASD(d)/RAEM(t)   JD/JXT(CZ)   47
46

AUTHORS: Popov, L. Ye.; Kozlov, E. V.; Kozhemyakin, N. V.

TITLE: Ordering atmospheres on antiphase boundaries in an AB superstructure (of the beta-brass type)
18

TOPIC TAGS: brass, ordered structure, stoichiometric mixture, alloy structure
18

ABSTRACT: The authors calculate the equilibrium values of the concentrations of the components c'_A and c'_B and the degree of order S_1 on the $\langle 110 \rangle \{111\}$ antiphase boundaries in a superstructure of the type of β-brass, in the interval near stoichiometric concentration. To simplify the calculations, it is assumed that c'_A, c'_B, and S_1 differ from the equilibrium values of these quantities in the matrix

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L 6729-65
ACCESSION NR: AP4044879

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$(c_A, c_B$ and $S)$ only in the two planes forming the antiphase boundary. This holds true at temperatures from absolute zero to approximately $0.8T_c$. The Bragg-Williams approximation is used, and the system of equations set up for the constants was solved by graphic approximation. The following is concluded: 1. The concentration Δc_A of the ordering atmospheres is quite appreciable at low temperatures, decreases rapidly with rising temperature, and is small near T_c.

2. Δc_A depends significantly on the average concentration of the components in the solid solution. 3. The equilibrium degree of order on the antiphase boundary is lower than in the matrix, in agreement with the deductions of N. Brown (Phil. Mag. v. 4, 693, 959). However, for $T < 0.4 T_c$ the values of S_1 and S do not come together with decreasing temperature, as predicted by Brown, but diverge because of the increase in the concentration of the ordering

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L 6729-65
ACCESSION NR: AP4044879   /

atmospheres on the antiphase boundary. This report presented by
G. V. Kudryumov. Orig. art. has: 2 figures and 9 formulas.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom
gosudarstvennom universitete im. V. V. Kuyby*sheva (Siberian Physi-
cotechnical Institute at the Tomsk State University)

SUBMITTED: 20Apr64   ENCL: 00

SUB CODE: MM   NR REF SOV: 003   OTHER: 001

Card   3/3

L 13047-65   EWT(m)/EWP(w)/EPF(n)-2/EWA(d)/EWP(t)/EWP(b)   Pu-4/Pad   ASD(f)-2/
AS(mp)-2/AEDC(a)/AFWL/SSD/ASD(m)-3/ASD(a)-5/ESD(t)   JW/JD/HW/JG/MLK

ACCESSION NR: AT4046834   S/0000/64/000/000/0150/0154

AUTHOR: Popov, L. Ye.; Sukhovarov, V. F.; Panova, L. M.; Sakova, M. P.

TITLE: Effect of atomic defect relaxation on diffusion transformation in Ni-Mo alloys

SOURCE: AN SSSR. Nauchny*y sovet po probleme zharoprochny*kh splavov. Issledo-
vaniya staley i splavov (Studies on steels and alloys). Moscow, Izd-vo Nauka, 1964,
150-154

TOPIC TAGS: diffusion, nickel, molybdenum, nickel molybdenum alloy, activation energy, migration energy, diffusion transformation, atomic defect, atomic defect relaxation

ABSTRACT: During stepwise tempering or heating at a constant rate, cold-worked nickel reveals two stages of atomic defect relaxation at temperatures higher than room temperature, evidenced by the recovery of electrical resistance and density and the emission of absorbed energy. It was therefore considered desirable to investigate the effect of atomic defect relaxation on transformations in cold-worked nickel alloys with a large difference between the atomic radii of the alloy components. In the present paper, an alloy was selected with 10 at.% Mo. The difference between the atomic radii in this alloy could affect its diffusion in

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L 13047-65

ACCESSION NR: AT4046834   6

comparison with Ni-Cr and Ni-Fe alloys. Fig. I of the Enclosure shows that the
cold-worked Ni-Mo alloy shows a marked increase in electrical resistance during
tempering. Moreover, the sample length decreases. At temperatures above 200C,
the activation energy in the cold worked alloy increases, reaching a constant
value of 66±2 kcal./mole at 270-300C. Tests were also made involving measurement
of the vacancy migration energy. It was found that for nickel, this energy is
approximately equal to the vacancy formation energy. For a Ni-Cr alloy, the first
(vacancy migration energy) is 39±2 kcal./mole and the second is 40±3 kcal./mole.
For the Ni-Mo alloy, however, these energies differ sharply. "The authors wish
to thank scientific worker V. V. Karavayeva and student N. Lobanova for help in
performing the tests." Orig. art. has: 3 figures and 2 formulas.

ASSOCIATION: none

SUBMITTED: 16Jun64   ENCL: 01   SUB CODE: MM

NO REF SOV: 006   OTHER: 008

Card 2/3

KOZLOV, E.V.; POPOV, L.Ye.

Theory of the hardening of ordered solid solutions. Dokl. AN SSSR
152 no.3:595-597 S '63.   (MIRA 16:12)

1. Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosudarstven-
nom universitete im. V.V.Kuybysheva. Predstavleno akademikom G.V.
Kurdyumovym.

SUKHOVAROV, V.F.; POPOV, L.Ye.

Studying the deformation aging of nickel under the effect of externally applied stress. Fiz. met. i metalloved. 17 no.1:118-121 Ja '64.

1. Sibirskiy fiziko-tekhnicheskiy institut.

(MIRA 17:2)

POPCV, L.Ye.; ALEKSANDROV, N.A.

Nature of the abrupt deformation of nickel-chromium alloys. Izv. vys.
ucheb. zav.; fiz. no.6:99-103 '63.   (MIRA 17:2)

1. Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosudarstvennom
universitete imeni Kuybysheva.

ACCESSION NR: AP4029002

AUTHOR: Popov, L. Ye.; Sukhovarov, V. F.

TITLE: On the temperature boundaries of intermittent deformation of nickel

SOURCE: Fizika metallov i metallovedeniye, vol. 17, no. 3, 1964, 428-434

TOPIC TAGS: temperature boundary, intermittent deformation, nickel, nickel deforma-
tion, plastic deformation, viscosity, age hardening

ABSTRACT: The degrees of plastic deformation of nickel, at which skips appear and
disappear, depend on the temperature and speed of testing, decreasing with tempera-
ture increase and a speed decrease. The activation energy of the processes,
associated with the appearance and disappearance of skips, is equal to 20 and 33
kcal/mole, respectively. It is assumed that skips appear when the difference between
the upper and lower ranges of yield attain a definite minimum value. The disappear-
ance of skips is associated with the transition of dislocation to a viscous motion
along with atmospheres. Calculations of the speed viscous flow, were made according
to the Weertman and Kottrell theories. The upper and lower temperature boundary of
skips is found and plotted in graphs. By taking into consideration several assump-
tions made by the authors, the agreement of the theoretical curves with the

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ACCESSION NR: AP4029002

experimental can be considered satisfactory. Orig. art. has: 5 figures.

ASSOCIATION: Sibirskiy fiziko-tekhnichesky institut (Siberian Physical Technical Institute)

SUBMITTED: 18Mar63   DATE ACQ: 27Apr64   ENCL: 00

SUB CODE: ML   NO REF SOV: 013   OTHER: 008

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ACCESSION NR: AP4013099   S/0126/64/017/001/0118/0121

AUTHORS: Sukhovarov, V. F.; Popov, L. Ye.

TITLE: A study of the deformational aging of nickel under external loading.

SOURCE: Fizika metallov i metalloved., v. 17, no. 1, 1964, 118-121

TOPIC TAGS: nickel, Nl nickel, nickel deformation, metal flow, nickel aging, deformational aging, dislocation effect

ABSTRACT: Experiments were performed to study the effect of external loading on the progress of the deformational aging in nickel. The Nl nickel samples were 1 mm in diameter. They were annealed at 900C for two hours, cooled in the oven, and stretched at the deformation rate of 60%/hr (elongation curves were registered photographically). The difference ($\Delta\delta$) between the upper yield point and the stress at the end of the preliminary deformation and also the difference ($\Delta\delta'$) between the upper and the lower yield points, were studied. It was established that the relation of $\Delta\delta$ to log t was linear and that the activation energy of the deformational aging process can be calculated from the slope of the lines for the definite values of $\Delta\delta$. The activation energy (for chosen $\Delta\delta$ values) was

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ACCESSION NR: AP4013099

found to be independent of the degree of a preliminary deformation and varied in
the course of the process. This variation is believed to be caused by the fact
that several processes rather than one occurred and that each involved a different
activation energy. For this reason the values of the activation energies measured
were quite meaningless. It may be assumed that the processes of the deformational
aging with low activation energy occur in both loaded and load-free conditions.
However, under load, the effect of aging becomes apparent (probably because of the
distortion of dislocations) and reaches its maximum under the greatest external
load. The study showed also that the deformational aging of nickel is related
to the presence of carbon and (possibly) nitrogen. Orig. art. has: 1 table and
5 graphs.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut (Siberian Physicotechnical
Institute)

SUBMITTED: 03Mar63   DATE ACQ: 26Feb64   ENCL: 00

SUB CODE: MM   NO REF SOV: 005   OTHER: 005

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BOL'SHANINA, M.A.; POPOV, L.Ye.

Temperature dependence of resistance to deformation and the K-state
in nickel-chromium alloys. Issl. po zharopr. splav. 9:37-42 '62.

(MIRA 16:6)

(Nickel-chromium alloys—Electric properties)
(Metals, Effect of temperature on)

L 18552-63   EWP(q)/EWT(m)/BDS   AFFTC/ASD   Pad   JD/WB

S/0126/63/015/005/0703/0709

ACCESSION NR: AP3001695

AUTHORS: Sukhovarov, V.F.; Popov, L.Ye; Karavayeva, V.V.; Panova, L.M.; Kharlova,
R.P.; Makogon, M. B.

TITLE: Investigation of the atomic redistribution process in Ni + 10 at.% Mo
alloy

SOURCE: Fizika metallov i metallovedeniye, v. 15, no. 5, 1963, 703-709

TOPIC TAGS: atomic redistribution, Ni-Mo alloy, nickel-molybdenum alloy

ABSTRACT: The thermal capacity and electrical resistivity of the alloy Ni + 10
at.% Mo was measured in studying formation of the K-state and its influence on the
mechanical properties of the alloy. It is believed that short-range order for-
mation is the necessary condition for K-state origin. The alloy was a homo-
geneous solid solution, the thermal treatment of which caused a variation in the
degree of the short-range order. The difference between Ni and Mo atomic radii
affects the activation energy of the formation and movement of vacancies which
bring about the formation of K-state. A continuous heating of the specimen
showed an uninterrupted increase in thermal capacity up to 330°C. At this point

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L 18552-63

ACCESSION NR: AP3001695

a decrease began and lasted to 390°. This phenomenon is explained by formation of the K-state and by its subsequent destruction at 400C where the thermal capacity resumed its increase. The tests showed that formation of K-state increases the magnitude of electrical resistivity. "We express our sincere appreciation to Professor M. A. Bol'shanina for drawing our attention to the Ni-Mo system and to Engineer L.K. Novikova for the hydrogen annealing of the samples". Orig. art has: 5 figures.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy nauchno-issledovatel'skiy institut (Siberian Physicotechnical Scientific Research Institute)

SUBMITTED: 07Jul62   DATE ACQ: 11Jul63   ENCL: 00

SUB CODE: ML   NO REF SOV: 020   OTHER: 015

Card 2/2

POPOV, L.Ye.; BUTKEVICH, L.M.; KOZHEMYAKIN, N.Ye.; ALEKSANDROV, N.A.

Upper temperature boundary in the phenomena of jumplike flow in alloys and solid solutions. Fiz. met. i metalloved. 16 no. 3:457-462 S '63.   (MIRA 16:11)

1. Sibirskiy fiziko-tekhnicheskiy institut.

POPOV, L.Ye.; ALEKSANDROV, N.A.

Conditions for the onset of creep jumps and the lower temperature of the region of occurrence. Izv.vys.ucheb.zav.;fiz.no.2:125-132 '63.
(MIRA 16:5)

1. Sibirskiy fiziko-tekhnicheskiy institut pri Tomskom gosudarstvennom universitete imeni Kuybysheva.
(Deformations (Mechanics))   (Creep of metals)

S/126/63/015/003/017/025
E193/E383

AUTHORS: Kudryavtseva, L.A., Panova, L.M., Popov, L.Ye.
             and Sukhovarov, V.F.

TITLE: The effect of various atomic defects on the kinetics
             of formation of the K-state in nickel-molybdenum
             alloys

PERIODICAL: Fizika metallov i metallovedeniye, v. 15, no. 3,
             1963, 451 - 455

TEXT: The object of the present investigation was to eluci-
date the nature of the low-temperature stage of relaxation of
atomic defects in cold-worked nickel and its alloys. Experiments
were conducted on a Ni-10% Mo alloy chosen for this purpose,
because the formation of the K-state accompanied by a large
increase in resistivity took place in quenched specimens of this
material and because of the great difference in the atomic radii
of Ni and Mo, which made it possible to assume that the movement
of dislocated atoms would make little, if any, contribution to the
formation of the K-state. The variation in electrical resistivity
of cold-worked and quenched specimens during steplike, low-
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S/126/65/015/003/017/025
E193/E383

The effect of various ....

temperature annealing was studied and the temperature-dependence
of the internal friction of cold-worked, annealed and quenched
specimens was determined. The results of electrical resistivity
measurements are reproduced in Fig. 1, where ρ ($\mu\Omega$.cm) is
plotted against the annealing temperature of cold-worked (curve 1)
and quenched (curve 2) specimens. It will be seen that the low-
temperature stage of the formation of the K-state was clearly
defined in the cold-worked specimen and not revealed at all in the
quenched alloy. The graph reproduced in Fig. 2, where the acti-
vation energy (U, kcal/mole) of the process is plotted against
temperature (^{o}C) shows that the average value of $U = 22$ kcal/mole
in the 50 - 150 ^{o}C interval increased at the end of the low-
temperature stage of the process, corresponding to the deflection
point on the curve shown in Fig. 1. Since, as has been stated
above, dislocated atoms in the Ni-Mo alloy should not make any
significant contribution to the formation of the K-state, the low-
temperature stage of this process should be associated with atomic
defects of a different type. The nature of these defects can be
inferred from the results of internal-friction measurements

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The effect of various ....

reproduced in Fig. 3, where $Q^{-1} \times 10^4$ is plotted against the temperature ($^{\circ}$C) for specimens slowly cooled from 950 $^{\circ}$C (curve 1), quenched from 950 $^{\circ}$C (curve 2) and subject to cold plastic deformation (curve 3). It will be seen that internal friction of the cold-worked specimen had two peaks. It was postulated that the low-temperature peak at about 50 $^{\circ}$C (i.e. the temperature at which the electrical resistivity of the cold-worked material increased during annealing) was associated with vacancy pairs. The peak at about 120 $^{\circ}$C was attributed to the change in orientation of specific configurations of dislocated atoms observed earlier by Seeger at al (Phil. Mag., 1960, 5, 56) in pure nickel. There are 3 figures.

ASSOCIATION: Sibirskiy fiziko-tekhnicheskiy institut
                (Siberian Physicotechnical Institute)

SUBMITTED: July 25, 1962

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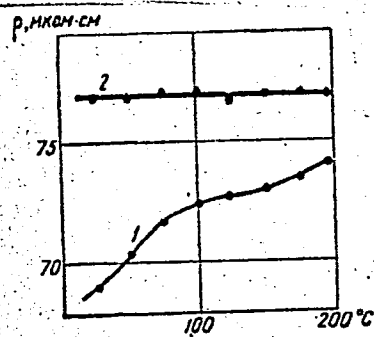S/126/63/015/003/017/025
E193/E383

The effect of various ....

Fig. 1:

Fig. 2:

Fig. 3:

Рис. 1. Изменение электросопротив-
ления при ступенчатых отпусках хо-
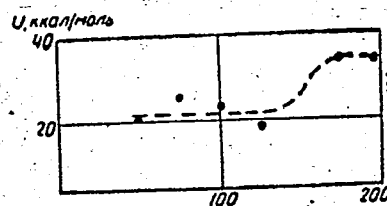лоднодеформированного (*I*) и зака-
ленного (*2*) образцов сплава Ni—Mo.

Рис. 2. Температурная зависимость энер-
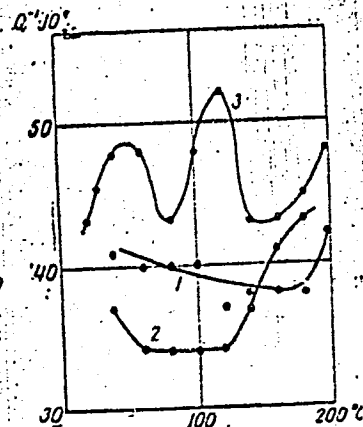гии активации образования K-состояния
в сплаве Ni—Mo.

Рис. 3. Температурная зависимость
внутреннего трения медленно охлаж-
денного от 950° (*I*), закаленного от
950° (*2*) и холоднодеформированно-
го (*3*) образцов сплава Ni—Mo.

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